

Claims

- 1 1. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a seal having a seal perimeter and mounted to the frame, the seal perimeter
4 adapted substantially for rolling contact with a surface to be traversed; and
5 a drive configured to move the apparatus relative to the surface.
- 1 2. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at
2 least one roller.
- 1 3. The apparatus of claim 2 wherein the at least one roller comprises a compressible
2 outer surface.
- 1 4. The apparatus of claim 2 wherein the drive is adapted to power the at least one
2 roller.
- 1 5. The apparatus of claim 1 wherein a portion of the seal perimeter comprises at
2 least two rollers.
- 1 6. The apparatus of claim 5 wherein the at least two rollers are substantially parallel
2 and disposed on opposing sides of the frame.
- 1 7. The apparatus of claim 1 wherein a portion of the seal perimeter comprises a
2 track.
- 1 8. The apparatus of claim 7 wherein the track comprises a plurality of contiguous
2 pads.
- 1 9. The apparatus of claim 8 wherein at least one pad comprises a flexible sealing
2 element.
- 1 10. The apparatus of claim 8 wherein at least one pad comprises a pair of
2 independently compressible flexible sealing elements.
- 1 11. The apparatus of claim 7 wherein the drive is adapted to power the track.
- 1 12. The apparatus of claim 1 wherein a portion of the seal perimeter comprises two
2 tracks.

1 13. The apparatus of claim 12 wherein the two tracks are substantially parallel and
2 disposed on opposing sides of the frame.

1 14. The apparatus of claim 1 further comprising means for maintaining the apparatus
2 in contact with the surface.

1 15. The apparatus of claim 14 wherein the maintaining means comprises a pressure
2 differential relative to a zone defined at least in part by the seal perimeter.

1 16. The apparatus of claim 15 wherein the pressure differential is a partial vacuum.

1 17. The apparatus of claim 1 further comprising a processing apparatus mounted to
2 the frame and adapted to process at least a portion of the surface.

1 18. The apparatus of claim 1 wherein the seal perimeter comprises a substantially
2 closed polygon.

1 19. The apparatus of claim 18 wherein the polygon is a quadrilateral.

1 20. The apparatus of claim 1 further comprising a processor for controlling the
2 apparatus.

1 21. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a locomoting seal adapted substantially for rolling contact with the surface to be
4 traversed and mounted to the frame; and
5 a drive configured to move the apparatus relative to the surface.

1 22. The apparatus of claim 21 wherein the locomoting seal comprises a perimeter, at
2 least a portion of which cooperates with the drive to move the apparatus relative to the
3 surface.

1 23. A surface traversing apparatus, the apparatus comprising:
2 a frame;
3 a locomoting seal comprising:
4 first and second substantially parallel rollers disposed on opposing
5 sides of the frame, wherein the rollers are rotatably connected to the
6 frame;

7 first and second tracks disposed on additional opposing sides of
8 the frame, wherein the rollers and tracks are adapted substantially for
9 rolling contact with the surface to be traversed and maintaining a seal
10 with the surface; and
11 a drive configured to move the apparatus relative to the surface.

1 24. A method of traversing a surface, the method comprising the steps of:

2 providing an apparatus comprising:

3 a frame;

4 a seal having a seal perimeter and mounted to the frame, the seal
5 perimeter adapted substantially for rolling contact with the surface to be
6 traversed; and

7 a drive configured to move the apparatus relative to the surface; and
8 traversing the surface with the apparatus.